A NEW *DEUDORIX* FROM IRIAN JAYA (WEST PAPUA), INDONESIA (LEPIDOPTERA, LYCAENIDAE), WITH NOTES ON *DEUDORIX EPIRUS* FELDER, 1860

W. JOHN TENNENT [1], CHRIS J. MÜLLER [2] and ANDREW RAWLINS [3]

[1] *Department of Entomology, The Natural History Museum, London SW7 5BD, England*

[2] *Molecular Ecology Laboratory, School of Biological Sciences, Macquarie University, Sydney, NSW 2109, Australia*

[3] *392 Maidstone Road, Rainham, Kent ME8 0JA, England*

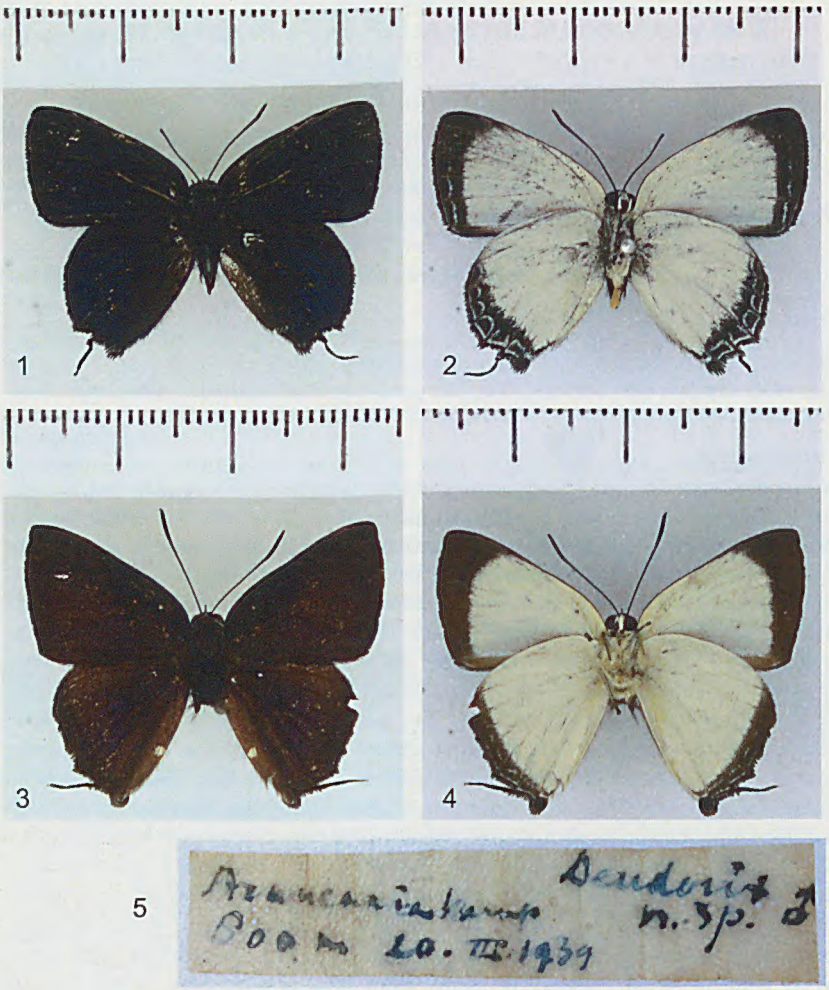
Abstract

A new and distinctive species of *Deudorix*, *D. toxopeusi* sp. n., from Irian Jaya is described and illustrated. Distribution and nomenclature of geographical races of *D. epirus* Felder, 1860, are discussed; selected taxa are illustrated. The names *agimar* Fruhstorfer, 1908, and *almar* Fruhstorfer, 1908, are synonymised with the name *despoena* Hewitson, 1863

Introduction

In his *magnum opus* of Papua New Guinea butterflies (PNG), Parsons (1998) set out to provide details and illustrations of each of the butterfly species occurring in PNG. In doing so, he mentioned in passing notable specimens from other islands and regions seen in museums around the world. In an introduction to the genus *Deudorix* Hewitson, 1863, he noted (Parsons, 1998: 403) nine species in PNG, and a further two species from the western half of the island of New Guinea (Indonesia) including "a single male ...of a very distinctive undescribed species" in the collections of Naturalis (Nationaal Natuurhistorisch Museum), Leiden, The Netherlands. Introducing the *epirus* Felder, 1860, species-group, Parsons added "[species of the *epirus* species-group] are characterised by their white or creamy-white, heavily brown-banded undersides. One other distinctive undescribed species (known only by a male from the Snow Mountains of Irian Jaya) may belong in this group as its underside is predominantly white. However, it completely lacks median banding" (Parsons, 1998: 406). The butterfly was not illustrated. It is noted here that the western part of the main island of New Guinea, which belongs politically to Indonesia, is variously referred to in the literature as Irian Jaya, West Irian or West Papua. The name Irian Jaya is used here, other than in direct quotes.

Some years later, Yagishita (2006), described *Deudorix novellus* from five males taken in November 2004 and March 2005 on the island of Morotai, North Maluku, Indonesia. *D. novellus* is an atypical *Deudorix* species, with an unusual underside that is fundamentally creamy-white and unmarked with the exception of a brown border enclosing prominent pale blue markings illustrated here in figs 1, 2 (Yagishita, 2006: pl. 1, figs 9-10). Although Parsons (1998) was included in the references, Yagishita made no reference in the text to Parsons' "Snow Mountains" specimen in Leiden, but did illustrate (Yagishita, 2006: pl. 1, figs 11-12) a female, of which he said "two



Figs 1-5: (1) *Deudorix novellus* ♂ upperside (Morotai); (2) ditto, underside; (3) *Deudorix toxopeusi* ♂ upperside (Holotype: Irian Jaya) (4) ditto, underside; (5) ditto, data from glassine envelope.

females of unknown species of Lycaenidae obtained at Timika, Papua state (Irian Jaya) in the mainland New Guinea on September 2001 and on March 2003, have the same pattern on the underside as [*novellus*] …".

At much the same time (January 2007), unaware of Yagishita's slightly earlier paper, the same species was described by Okubu (2007) as *Deudorix detanii* from a solitary male specimen taken on Morotai in April 2006. Okubu

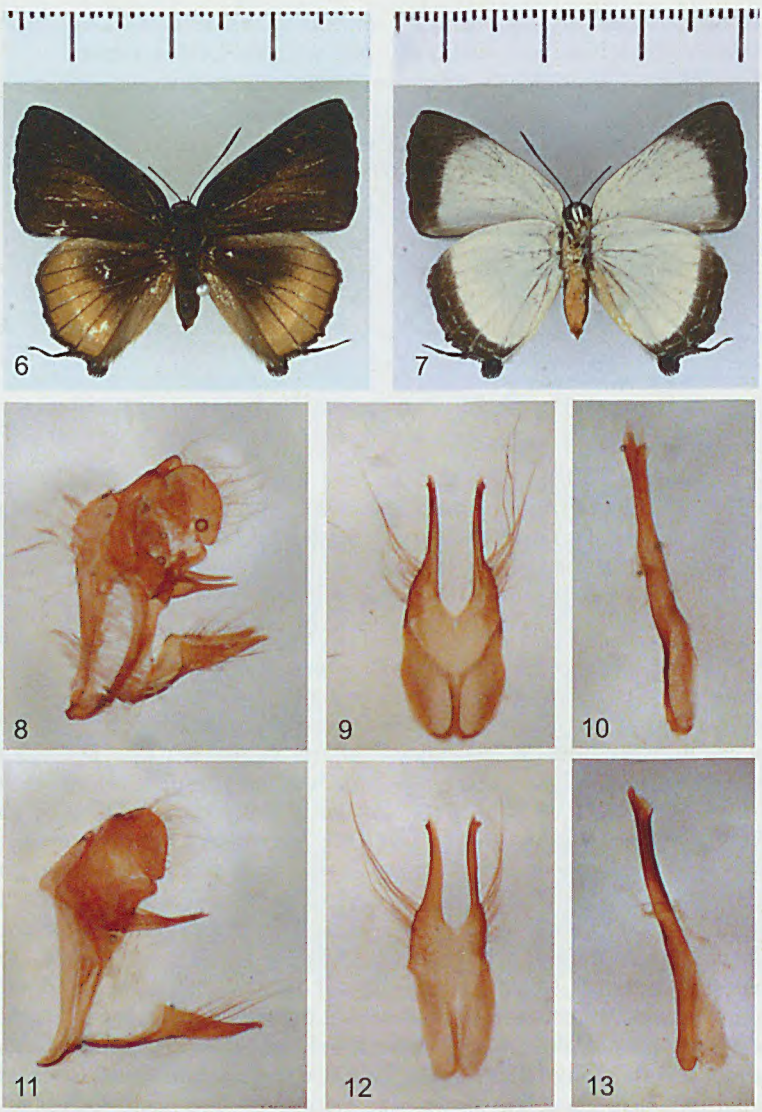
illustrated a specimen similar in all respects to that illustrated by Yagashita (2006). Although he had presumably not seen the Leiden specimen, Okubu (2007: 3) went on to say that Parsons "mentioned an undescribed species of this group from the Snow Mountains of Irian Jaya, and it seems similar to this new species [*detanii* (*i.e. novellus*)], but the two are considered as separate species because of their geographically remote localities".

As part of wider ranging research, the first two authors visited Naturalis, Leiden in September 2009, and obtained the specimen mentioned by Parsons (1998) on temporary loan (figs 3, 4). It bears a superficial resemblance to *D. novellus* in the sense that the underside is plain creamy-white with a dark border, but it is clear from its external facies, including the genitalia, that it represents an undescribed species:

***Deudorix toxopeusi* sp. nov.**
(figs 3, 4, 6, 7, 11-13)

Types. *Holotype* ♂: INDONESIA, Irian Jaya; two labels: (1) (typed): Neth. Ind.-American New Guinea Exped. / Araucaria Camp / 800m / 20.iii1939 / L. J. Toxopeus; (2) (handwritten – see fig. 5): Araucaria Camp 800m / 20.iii1939 / *Deudorix* n. sp. ♂ (Naturalis, Leiden). *Paratypes*: 1♀ Timika, Papua State (Irian Jaya), iii.2003 (BMNH, London); 1♂ Nabire, Weyland, Irian Jaya, xii.2008; 1♀ Timika, Papua State (Irian Jaya), ix.2001 (both coll. Yagishita).

Description. Male (Figs 3, 4, 11-13), generally similar to *D. novellus* but wings significantly more acute; forewing length 18mm; appears almost uniform dull purple, but in oblique light upperside forewing dark brown, with shining purplish blue broad median band, reaching inner margin and almost reaching tornus, but not costa (upperside with dark, dull blue median band, discernable in oblique light in *D. novellus*); hindwing similar, blue almost reaching outer margin and tornus, but not inner margin; tornal lobe moderately well developed with distinct pale blue scales enclosing distinct dark spot (tornal lobe less prominent in *D. novellus*); underside similar to *D. novellus*, but with narrower, less decorated dark border; plain creamy-white, forewing with broad brown border, unmarked (border darker brown, enclosing subdued series of submarginal pale markings in *D. novellus*), extending along inner margin; underside hindwing similar, border narrower, enclosing obscure double line of vestigial pale markings (border broader, darker, diffuse along inner margin, pale markings extensive in *D. novellus*); tornal lobe dark chocolate brown, like margin, centred black. Genitalia (figs 11-13) typical *Deudorix*, differing from *D. novellus* (figs 8-10) in having deeply indented posterior dorsal edge to tegumen (shallower in *D. novellus*); prominent angular "step" on posterior edge of vinculum ("rounded" in *D. novellus*); shape of valvae similar to *D. novellus* (and many other *Deudorix* species), but aedeagus proportionally longer than *D. novellus*.



Figs 6-13: (6) *Deudorix toxopeusi* ♀ upperside (Paratype: Irian Jaya); (7): ditto, underside; (8) *Deudorix novellus* ♂ genitalia (lateral view); (9); ditto, underside; (10) ditto, aedeagus; (11) *Deudorix toxopeusi* ♂ genitalia (lateral view); (12) ditto, valvae (dorsal view); (13) ditto, aedeagus.

Female (Figs 6, 7) (the female of *D. novellus* is unknown) upperside forewing dark chocolate brown, with obscure golden median patch; upperside hindwing golden brown, darker chocolate brown basally; underside white, tinged cream, with broad grey-brown borders, on forewing unmarked, indistinct pale submarginal line on hw.

Etymology. Named in recognition of Lambertus Johannes Toxopeus (1894-1951), the renowned lepidopterist and lycaenid specialist in Dutch colonial times, who collected the holotype. It is interesting that this highly distinctive species seems to have been recognised by Toxopeus (Fig. 5) as a new species of *Deudorix* when it was collected, but that it remained undescribed for a further 70 years, possibly due to the onset of the Second World War.

Distribution. Irian Jaya, Indonesia.

A note on *Deudorix epirus* Felder, 1860

According to Parsons (1998: 406) *D. epirus* (TL: Ambon) is known from a number of localities from the Moluccan islands of Ambon and Seram, through the Kai and Aru island groups to mainland New Guinea and northern Australia. The distribution of subspecies is not entirely clear. D'Abrera (1990: 303) listed six subspecies with the following distribution (misspellings are corrected, and dates of authorship and Type Localities [TL] added):

D. epirus eos Hewitson, 1863 [TL: Bacan] (=*tibillus* [*sic* =*tibullus*]) Staudinger, 1888 [TL: Halmahera]). Range: [Bacan].

D. epirus epirus Felder, 1865 [*recte* =1860] [TL: Ambon] (=*almar* Fruhstorfer?, 1908 [TL: Astrolabe Bay, Papua New Guinea]). Range: Ambon, Serang [*sic* = Seram], West Irian to Papua, Aru, Kai.

D. epirus agimar Fruhstorfer, 1908 [TL: Australia]. Range: Torres Strait. Is., Cape York [Australia].

D. epirus kallios [*sic* =*kallias*] Fruhstorfer, 1908 [TL: Fergusson]. Range: Fergusson Is. [D'Entrecasteaux group, Papua New Guinea].

D. epirus despoena Hewitson, 1863 [TL: Waigeo]. Range: Waigeo, West Irian, Mioswar I.

Some confusion is evident here. D'Abrera gave the published date of *epirus* as 1865 (no other publication dates were provided) which, if it were so, would give the names *despoena* and *eos* priority. However, the name *epirus* was proposed by Felder in 1860 in an earlier publication (Felder, 1860: 452) to that indicated (Felder & Felder, 1865-1875) by D'Abrera. As Hemming (1935) made clear, pages 18 and 19 of Hewitson's *Illustrations of Diurnal Lepidoptera*, on which *despoena* and *eos* were described, and plate 6, on which they were illustrated, were published in 1863. D'Abrera (1990: 303)

Figs 14-17: (14) *Deudorix epirus epirus* ♂ upperside (Ambon); (15) ditto, underside; (16) ditto, ♀ upperside (Ambon); (17) ditto, underside.

illustrated three specimens of *D. epirus*: a ♂ upperside of "*epirus eos*"; both surfaces of a ♀ "*epirus eos*"; and a ♀ upperside of "*epirus epirus*". Accompanying brief text claimed "♂ similar to *eos*" against *D. e. epirus*, *D. e. agimar*, and *D. e. kallias*, and also compared *D. e. despoena* to *D. e. eos*. This comparison is unhelpful: as our illustrations make clear, *D. e. eos* is distinctive and quite different in appearance to any race of *epirus*. It may warrant species status. For the record, it is hardly surprising that Staudinger (1888: pl. 95) described *Sithon tibullus*; the female he examined from Halmahera would have been very unlikely in the late 19th century to be obviously associated with the male *Deudorix eos* from Bacan illustrated by Hewitson (1863: pl. 6, figs 8, 9).

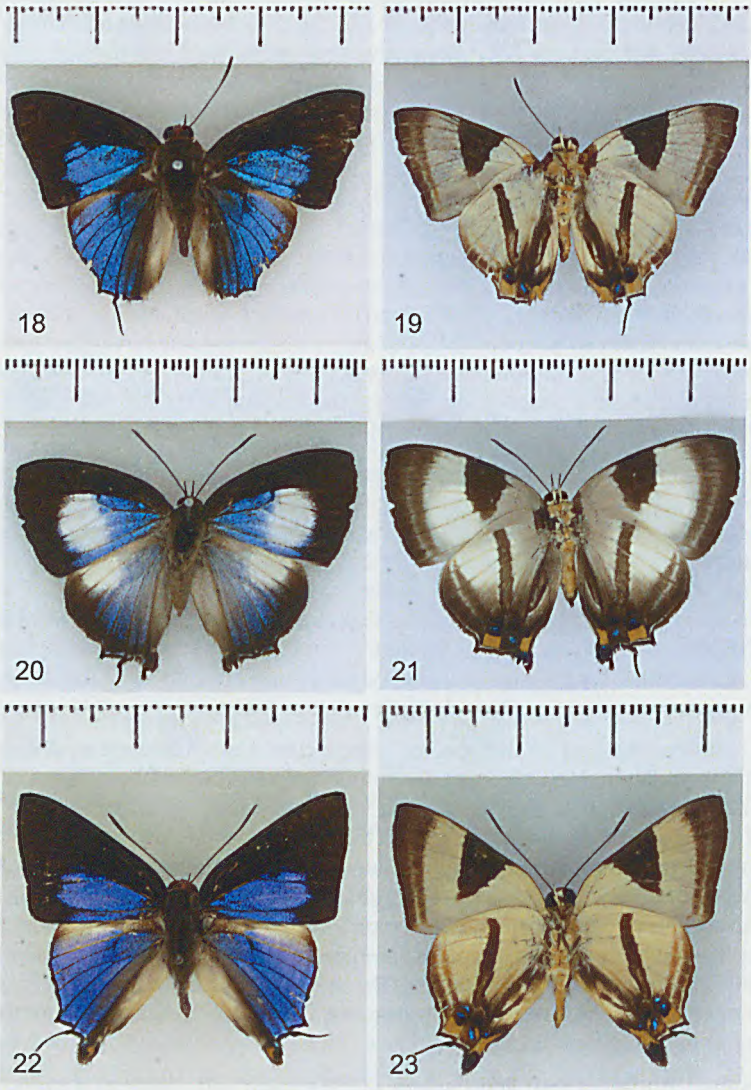
The female specimen (no locality data was provided) of nominate *epirus* illustrated by D'Abrera (1990: 303) is heavily suffused with blue, and has

been examined by the authors. It is ex-Felder and almost certainly originated from Ambon. D'Abrera included Aru in the distribution of nominate *epirus*. However, the authors have seen Aru specimens that are indistinguishable from *D. e. agimar* from Australia and females of a short series (1♂, 5♀♀) of *D. epirus* from Aru in the BMNH are variable in terms of overall size and in the degree of orange-yellow wash on the underside (the ♀ illustrated is a large, fresh specimen with a distinct underside yellowish tinge – others seen are almost white). With regard to *D. epirus* from Australia and the main island of New Guinea, Sands & Fenner (1978 : 104) said: "[*D. e. agimar*] was previously known only from far north-eastern Australia, including the Torres Strait islands. We have compared specimens from the Rocky and Claudie Rivers, northern Queensland, with both sexes from southern PNG and found them to be identical. At Lae … this subspecies overlaps with ssp. *epirus* Felder and intermediate forms occur …". Parsons (1998: 406), citing Sands & Fenner's observation, was of the opinion that "the taxon *agimar* is probably best treated as a synonym of *epirus* …".

The authors have examined specimens from all parts of the species' range and – leaving aside the highly distinctive North Moluccan *eos* (=*tibullus*) (Morotai [a new island record], Halmahera, Bacan and Obi) – concluded that although populations at the western and eastern extremities can be assigned with confidence, populations from the central part of the range of *D. epirus* are more problematic. We believe that nominate *epirus* is identifiable and probably restricted to Central Maluku (Ambon, Seram and Saparua); the male is darker blue, with differently shaped underside markings to other races, and the blue of the female is also darker and more extensive.

At the eastern end of the species' range (the eastern islands of Milne Bay Province, Papua New Guinea) the colour and markings of both sexes of *D. e. kallias* are also distinct, but in what we loosely refer to as the "central" part of the species' range – Australia, the whole of the main island of New Guinea, and some island groups to the west of New Guinea (including Aru) – we cannot identify constant geographical differences. *D. epirus* is variable, and examination of a long series from a variety of localities throughout New Guinea suggests that they probably represent the same subspecies. This in itself might have some bearing on the uncertainty of other authors (Sands & Fenner, 1978; D'Abrera, 1990; Parsons, 1998) in reaching a consensus in assigning geographical races.

Both D'Abrera (1990) and Parsons (1998) suggested *almar* as a synonym of *epirus*: we believe *almar* is synonymous with the phenotype occurring in New Guinea and Australia. We have examined the type material (1♂, 1♀ labelled Waigiou [sic], Hewitson Coll. 76-69 – figs 12-15) of *D. e. despoena* from Waigeo, and two additional males from that island, and find them indistinguishable from *epirus* from the New Guinea mainland.



Figs 18-23: (18) *Deudorix epirus despoena* ♂ upperside (Waigeo) (type ex-Hewitson); (19) ditto, underside; (20) ditto, ♀ upperside (Waigeo) (type ex-Hewitson); (21) ditto, underside; (22) *Deudorix epirus despoena* ♂ upperside (Aru); (23) ditto, underside.

Figs 24-29: *Deudorix epirus despoena*, ♀ uppperside (Aru); (25) ditto, underside; (26) *Deudorix epirus kallias* ♂ upperside (Kiriwina); (27) ditto, underside; (28) ditto, ♀ upperside (Kiriwina); (29) ditto, uns.

Figs 30-33: (30) *Deudorix epirus eos* ♂ upperside (Bacan); (31) ditto, underside; (32) ditto, ♀ upperside (Halmahera); (33) ditto, underside.

Examination of type specimens, and material from a wide range of localities, suggests the following nomenclature and distribution of *Deudorix epirus*, from west to east:

D. epirus eos Hewitson, 1863 (TL: Bacan) (=*tibullus* Staudinger, 1888 [TL: Halmahera]) (figs 30-33). Range: the North Moluccan islands of Morotai, Halmahera, Bacan and Obi (Note: may warrant species status).

D. epirus epirus Felder, 1860 (TL: Ambon) (figs 14-17). Range: the Central Moluccan islands of Ambon, Seram and Saparua.

D. epirus despoena Hewitson, 1863 (TL: Waigeo) (=*agimar* Fruhstorfer, 1908, syn. n. [TL: Australia]; =*almar* Fruhstorfer, 1908, syn. n. [TL: Astrolabe Bay, Papua New Guinea]) (figs 18-25). Range: Aru, Waigeo, mainland New Guinea, including some outlying islands, the Torres Strait Islands and north eastern Australia.

D. epirus kallias Fruhstorfer, 1908 (TL: Fergusson) (figs 26-29). Range: the D'Entrecasteaux, Trobriand and Louisiade island groups.

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